

Title: PRODUCTION OF OLIGOSACCHARIDES IN
TRANSGENIC PLANTS

Inventors: J.C.M. Smeeckens et al.

Docket No.: ARNO121867

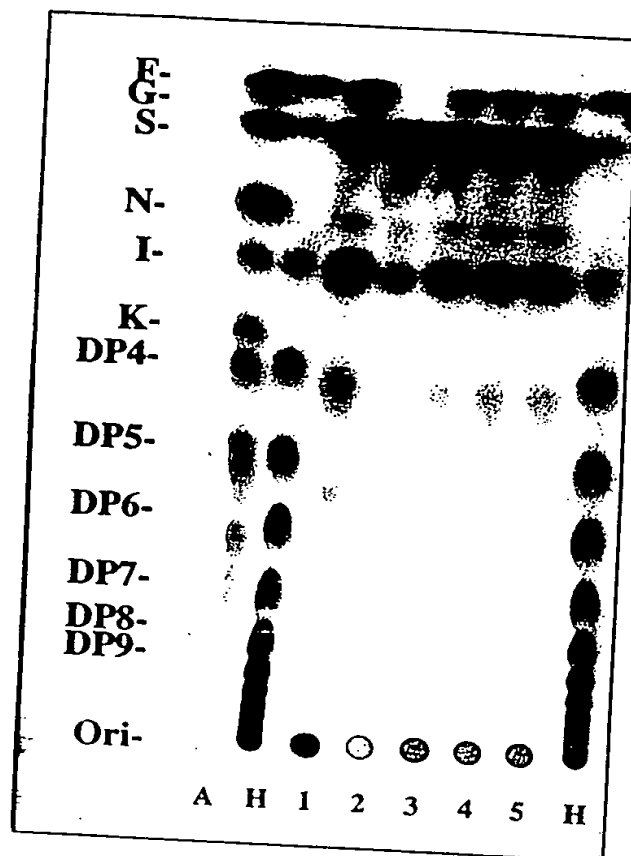


FIG. 1

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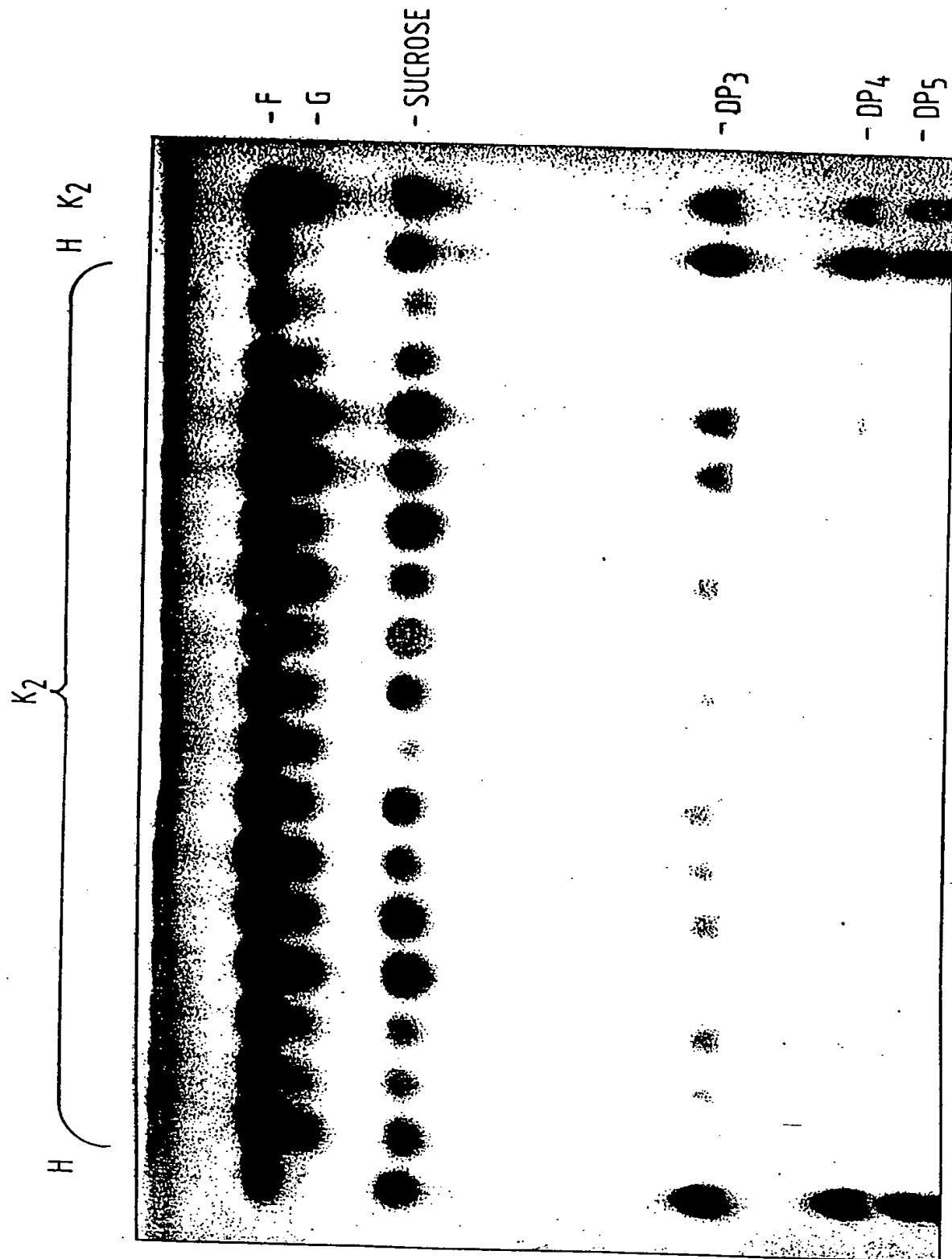


FIG. 2

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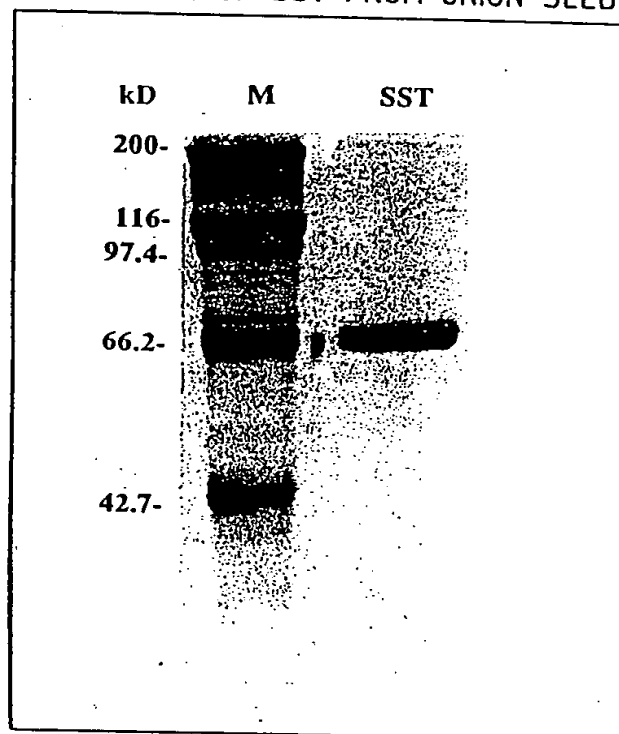


FIG. 3

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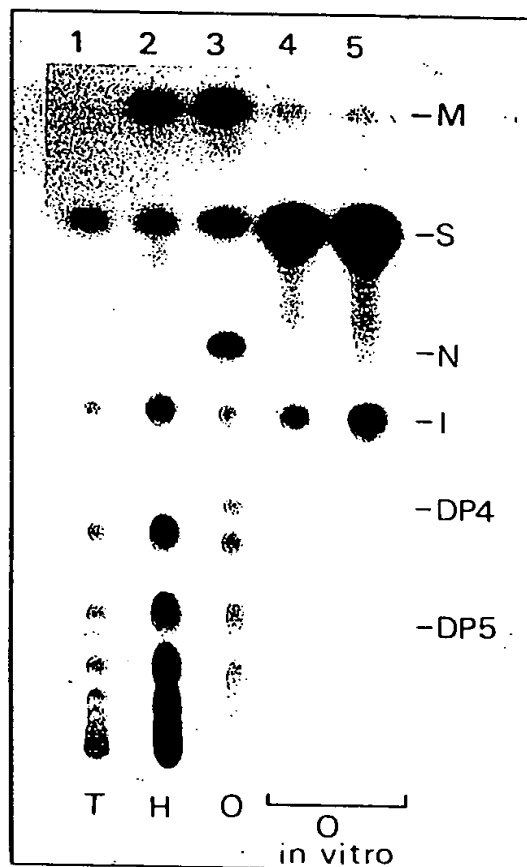
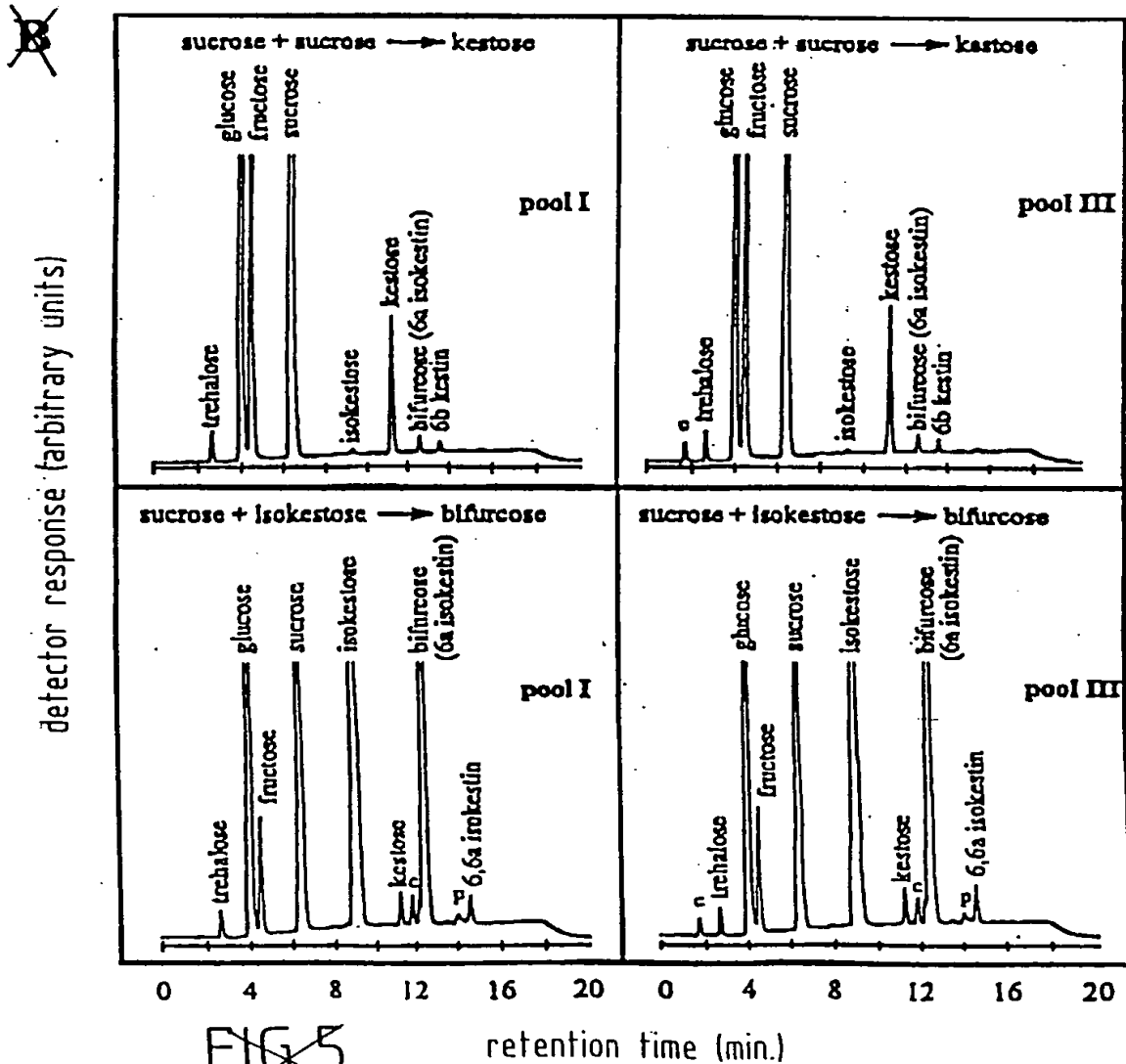
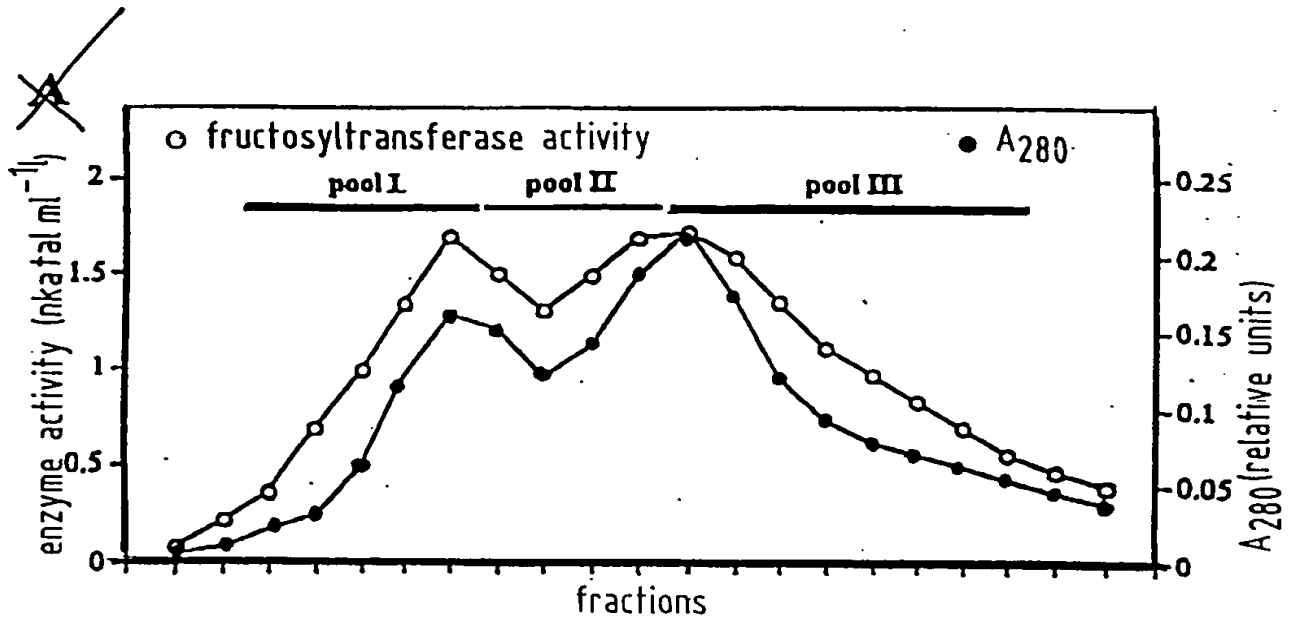


FIG. 4

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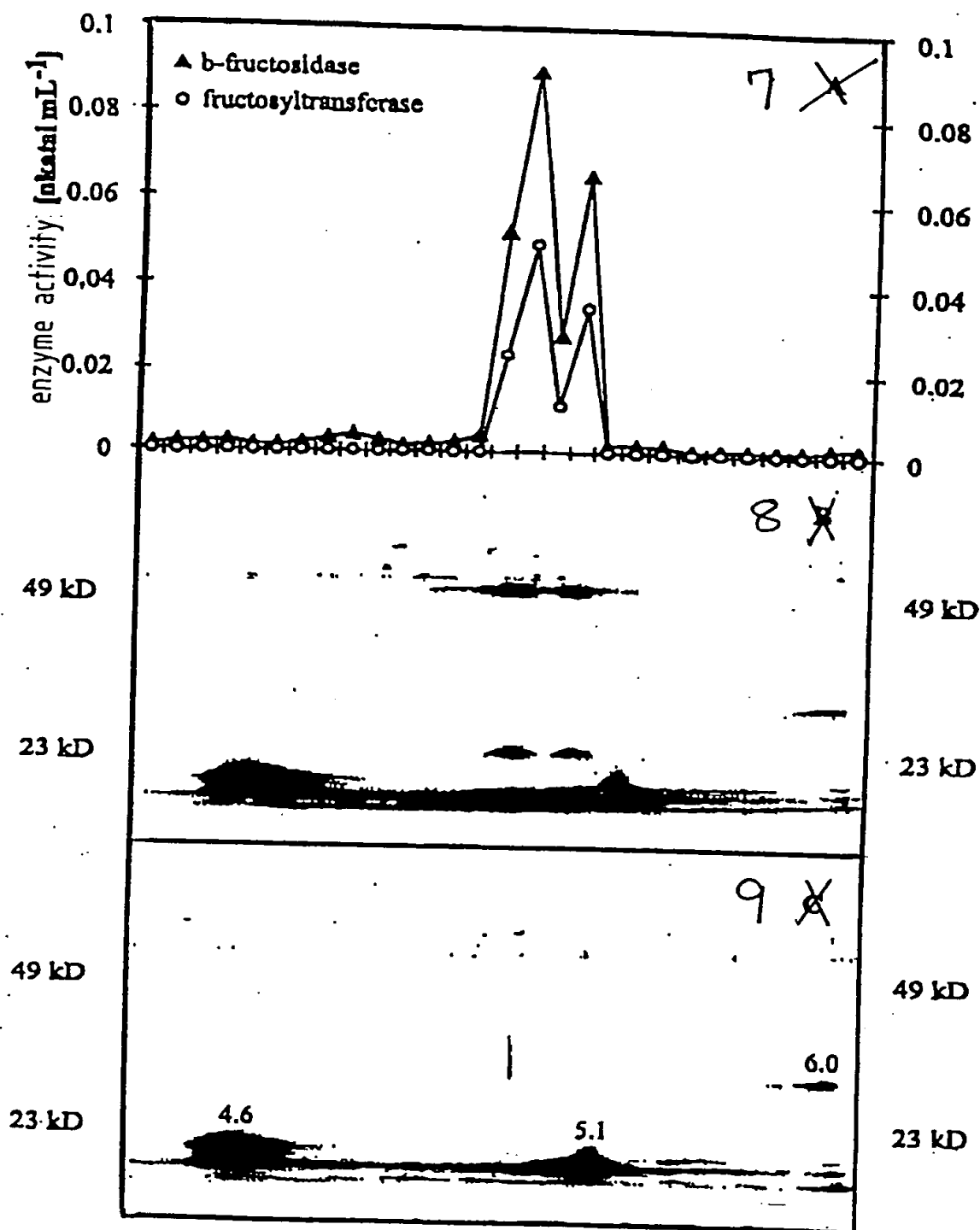
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FIGS 7, 8, 9

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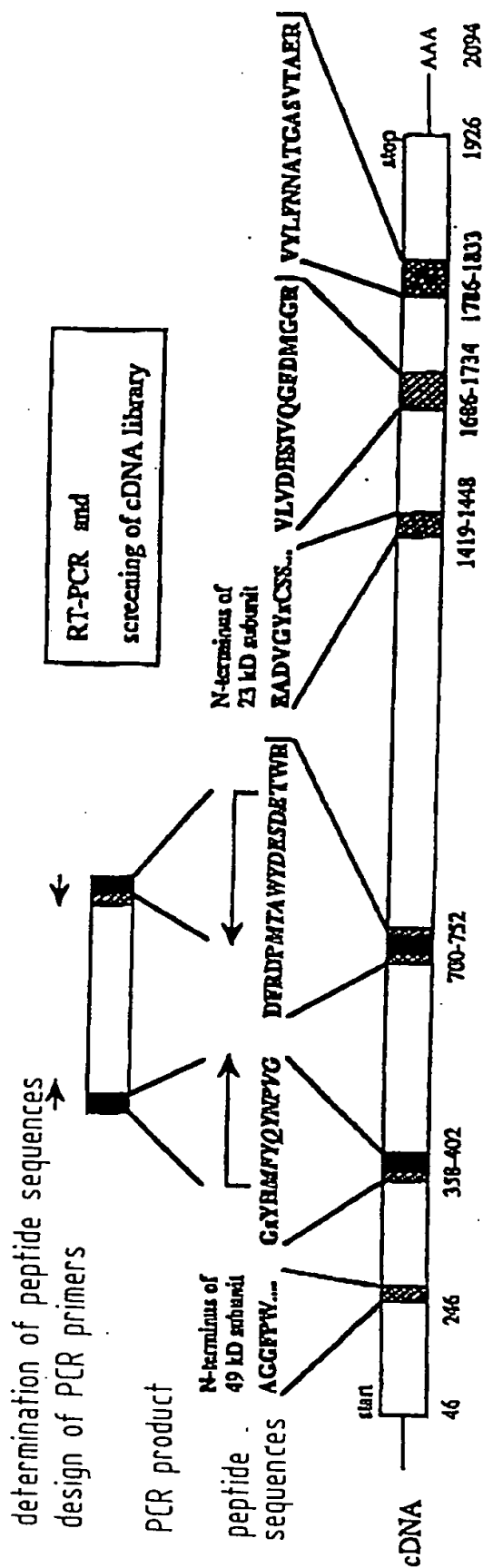


FIG. 10

Sequence of cDNA encoding 6-SFT from barley

GCTCAGAATCTACCAAACCCTCTCGGAGTTGACGAGCGGCGCCGCATGGGGTCACACGGC
MetGlySerHisGly
AAGCCACCGCTACCGTACGCCTACAAGCCGCTGCCCTCGGACGCCGCCGACGGTAAGCGG
LysProProLeuProTyrAlaTyrLysProLeuProSerAspAlaAlaAspGlyLysArg
ACCGGCTGCATGAGGTGGTCCGCGTGTGCCACCGTGCTGACGGCCTCGGCCATGGCGGTG
ThrGlyCysMetArgTrpSerAlaCysAlaThrValLeuThrAlaSerAlaMetAlaVal
GTGGTGGTCCGCCACGCTCCTGGCGGGATTGAGGATGGAGCAGGCCGTCGACGAGGAG
ValValValGlyAlaThrLeuLeuAlaGlyLeuArgMetGluGlnAlaValAspGluGlu
CGCGCGCGCGCGGGTTCCCGTGGAGCAACGAGATGCTGCACTGGCAGCGCAGCGGTTAC
AlaAlaAlaGlyGlyPheProTrpSerAsnGluMetLeuGlnTrpGlnArgserGlyTyr
CATTTCAGACGGCCAAGAACTACATGAGCGATCCCAACGGCCTGATGTATTACCGTGGA
HisPheGlnThrAlaLysAsnTyrMetSerAspProAsnGlyLeuMetTyrTyrArgGly
TGGTACCACATGTTCTACCACTACAACCCGGTGGGCACCGACTGGGACGACGGCATGGAG
TrpTyrHisMetPheTyrGlnTyrAsnProValGlyThrAspTrpAspAspGlyMetGlu
TGGGGCCACGCCGTGTCCCGGAACCTTGTCCAATGGCGCACCCCTCCCTATCGCCATGGTG
TrpGlyHisAlaValSerArgAsnLeuValGlnTrpArgThrLeuProIleAlaMetVal
GCCGACCAGTGGTACGACATCCTCGGAGTCCTCTCGGGCTCCATGACGGTGCTACCCAAC
AlaAspGlnTrpTyrAspIleLeuGlyValLeuSerGlySerMetThrValLeuProAsn
GGGACGGTCATCATGATCTACACGGGCGCCACCAACGCCTCCGCGGTGGAGGTCCAGTGC
GlyThrValIleMetIleTyrThrGlyAlaThrAsnAlaSerAlaValGluValGlnCys
ATCGCCACCCCGGCCGACCCCAACGACCCCTCCTCCGCGGTGGACCAAGCACCCCGCC
IleAlaThrProAlaAspProAsnAspProLeuLeuArgArgTrpThrLysHisProAla
AACCCCGTCATCTGGTCCGCGCGGGGGTGGGCACCAAGGATTTCCGAGACCCGATGACC
AsnProValIleTrpSerProProGlyValGlyThrLysAspPheArgAspProMetThr
GCCTGGTACGACGAGTCCGACGAGACATGGCGCACCCCTCCTCGGGTCCAAGGACGACCAC
AlaTrpTyrAspGluSerAspGluThrTrpArgThrLeuLeuGlySerLysAspAspHis
GACGGCCACCACGACGGCATCGCCATGATGTACAAGACCAAGGACTTCCTCAACTACGAG
AspGlyHisHisAspGlyIleAlaMetMetTyrLysThrLysAspPheLeuAsnTyrGlu
CTCATCCCGGGCATCTTGACCGGGTGGTGCACCGGCGAGTGGGAGTGTCATCGACTTC
LeuIleProGlyIleLeuHisArgValValArgThrGlyGluTrpGluCysIleAspPhe
TACCCCGTCCGGCCGAGAAGCAGCGACAACCTCGTCCGAGATGCTGCACGTGTTGAAGGCG
TyrProValGlyArgArgSerSerAspAsnSerSerGluMetLeuHisValLeuLysAla
AGCATGGACGACGAACGGCACGACTACTACTCGCTGGGCACGTACGACTCGGCGGCCAAC
SerMetAspAspGluArgHisAspTyrTyrSerLeuGlyThrTyrAspSerAlaAlaAsn
ACGTGGACGCCATCGACCCGGAGCTCGACTTGGGGATCGGGCTGAGATACGACTGGGGA
ThrTrpThrProIleAspProGluLeuAspLeuGlyIleGlyLeuArgTyrAspTrpGly

AAGTTTTATGCGTCCACCTCCTTCTATGATCCGGCCAAGAACCAGCGCGTCTCATGGGG
LysPheTyrAlaSerThrSerPheTyrAspProAlaLysAsnArgArgValLeuMetGly
TACGTCCGGCAGGTCCGACTCCAAGCGGGCTGATGTCTCAAGGGATGGGCTTCCATTGAG
TyrValGlyGluValAspSerLysArgAlaAspValValLysGlyTrpAlaSerIleGln
TCAGTTCCTAGGACGGTGGCTCTGGATGAGAAGACCCGGACGAACCTCCTGCTCTGGCCC
SerValProArgThrValAlaLeuAspGluLysThrArgThrAsnLeuLeuLeuTrpPro
GTTGAGGAGATCGAGACCCCTCCGCCTCAATGCCACGGAACGTACCGACGTTACCATTAAAC

FIG. 8 II

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VaIGluGluIleGluThrLeuArgLeuAsnAlaThrGluLeuThrAspValThrIleAsn
ACTGGCTCCGTCATCCATATCCCCTCCGCAAGGCACTCAGCTCGACATGCGGAGGCC
ThrGlySerValIleHisIleProLeuArgGlnGlyThrHisAlaArgHisAlaGluAla
TCTTTCCACCTTGATGCTTCCGCGGTGGCTGCCCTCAACGAGGCCGATGTGGGCTACAAC
SerPheHisLeuAspAlaSerAlaValAlaAlaLeuAsnGluAlaAspValGlyTyrAsn
TGCAGTAGCAGCGGCGGCGCTGTTAACCGCGGCGCGCTAGGCCCTTCGGCCTCCTCGTC
CysSerSerSerGlyGlyAlaValAsnArgGlyAlaLeuGlyProPheGlyLeuLeuVal
CTCGCCGCCGGTGACCGCGGTGGCGAGCAAACGGCGGTCTACTTCTACGTGTCTAGGGGC
LeuAlaAlaGlyAspArgArgGlyGluGlnThrAlaValTyrPheTyrValSerArgGly
CTTGACGGAGGCCTCCACACCAGCTTCTGCCAAGATGAGCTGAGATCGTCACGAGCCAAG
LeuAspGlyGlyLeuHisThrSerPheCysGlnAspGluLeuArgSerSerArgAlaLys
GATGTGACCAAGCGTGTCATCGGGAGCACGGTGCCGGTGCTCGACGGTGAGGCTTTGTCA
AspValThrLysArgValIleGlySerThrValProValLeuAspGlyGluAlaLeuSer
ATGAGGGTGCTCGTGGATCACTCCATCGTGACGGGCTTCGACATGGGCGGGAGGACCACG
MetArgValLeuValAspHisSerIleValGlnGlyPheAspMetGlyGlyArgThrThr
ATGACCTCGCGGGTGTAACCGATGGAGTCGTATCAGGAGGCAAGAGTCTACTTGTTC AAC
MetThrSerArgValTyrProMetGluSerTyrGlnGluAlaArgValTyrLeuPheAsn
AACGCCACCGGTGCCAGCGTGACGGCGGAAAGGCTGGTGGTGACGAGATGGACTCGGCA
AsnAlaThrGlyAlaSerValThrAlaGluArgLeuValValHisGluMetAspSerAla
CACAAACCAGCTCTCCAATGAGGACGATGGCATGTATCTTCATCAAGTTCTTGAATCTCGT
HisAsnGlnLeuSerAsnGluAspAspGlyMetTyrLeuHisGlnValLeuGluSerArg
CATTAAATAAGCTACATTGGATCAAAGAAGATCACCAGGGAAGGGCAATTCATACATAAAT
His
CGAATCATTCTGCACAACCTCGCTTGCGCATGCATTGAAACATCTGTATTTGGATCATC
TTCTTCATTTATGTCATAGTGAACCTATATTACTTTGTAAAAA

FIG. 8 (CONTINUED)

11

	86	115	125	132	157	164	220	229	280	290	343	353
H.v. 6sfc	HFQtaKNV.MsDEPGLAY..YrGwYRmFYQYNP		MeKCHAVS		..LSQsATVL		DFRDEPTAWY		eMECIDEYPVg		DwGK.FYASTsf	
V.I. Inv	HFQPEKNW.MEDPAGPNY..YKGYWHFFYQYNP		IVWGHAVS		..WtGSATIL		DFRDEPTAW1		MMECVDFFPVS		DYGi.FYASKtF	
D.C. Inv	HFQPEKNW.MEDPAGPLf..YKGYWHFFYQYNP		IVWGHAVS		..WtGSATIL		DFRDEPTAWf		MMECVDFFPVS		DYGi.YYASKtF	
L.e. Inv	HFQPEKNW.MEDPAGPLY..hKGYWHFFYQYNP		IVWGHAVS		..WtGSATIL		DFRDEPTAWC		MMECVDFFPVS		DYGK.YYASKtF	
D.C. CWInv	HFQPEKNW.MEDPAGPNY..YKGYWHFFYQYNP		IVWGHAVS		..rSGsATIL		aFRDEPTAW1		MMECVDFFPVS		DYGn.FYASKtF	
A.S. InvMGPY..YNGiYHssYQYNP		IVWGHAVS		..WtGSATIL		qFRDEPTAW1		
B.C. Inv	HLAPaGW.MEDPAGLiY..FNGrYBaFFQhhP		MWGHATS		..FSQsA.VD		hFRDPK...Y		MMECVDFFPrc.		DYGHDFYAPQsm	
S.m. Scrib	HiePktGL.LMDPAGfsY..FNGKfNLfYQNWp		ksWlRteS		..YSGsA.ye		hFRDPq...I		MMECPLVfI.		DFGfecYATQaf	
B.p. Lela	BysPEKNW.MEDPAGLvy..FeGeYHLfYQhtP		MWGHAVS		..PSQsAVVD		DFRDPKViNh		lFRCPDIFrIq		DYGSDFYAAvsw	
B.S. Sacc	RysPEKNW.MEDPAGmVY..YaGeYHLfYQYhP		MWGHAVS		..FSQsAVVD		DFRDPKVFhY		VMECPDLFelp		DYGrDFYAAvsw	
K.m. Inu	HFLPshGW.MEDPAGLwYDakeeDhLYQYNP		LYWGHAVS		..FSQsAVVD		nFRDPKVFh		qYECFGLwKVP		DmGKDYALQCF	
S.C. Inv1	HFLPshGW.MEDPAGLwYDakeeDhLYQYNP		LFWGHATS		..YSGsmVID		qFRDPKVFhY		qYECFGLiEvP		DfGKDYALQCF	
S.D. Inv	HFLPEKNW.MEDPAGLfyDktakLWHLfYQYNP		LYWGHATS		..FSQsivVD		qFRDPKVFh		qYgmsrLiEvP		DfGKDYALQCF	
A.n. Inv	HvLPpnGq.igDPClhytDpstGLfhwgFlhdG		...ssAtt		avFdG8.VI.		aFRDPYVFgn		tWagrwafNfe		DwGfssYAAagk	
B.a. SacB	gLDVWDsWPLqnad.gtvaeyDG.YHvvFalag		MEYqkvGd		qEWSGSATf.		CLRDPH..YV		k.rdaLaNGa		DiymlGXVS. n	
B.S. SacB	gLDVWDsWPLqnad.gtvanYdg.YHivFalag		MEYqkvGd		qEWSGSATf.		CLRDPH..YV		k.rtaLaNGa		DiymlGXVS. n	
S.m. SacB	clDvWDsNPvqDaktgevinhNG.YqlvvaumG		LlYnkYCd		qEWSGSATV.		aWRDPH..VI		mYnrASvaNaA		nvmlGXVS. d	
Z.m. LevU	...VWDtWPLrDiW.gqvvsFqG.WsvlFalva		yFYsigGS		.ENSGctim.		DFRDPHV.fI		tpdGArYcaaa		pGvyGfVSE n	

I

II

III

IV

V

FIG. 9/12

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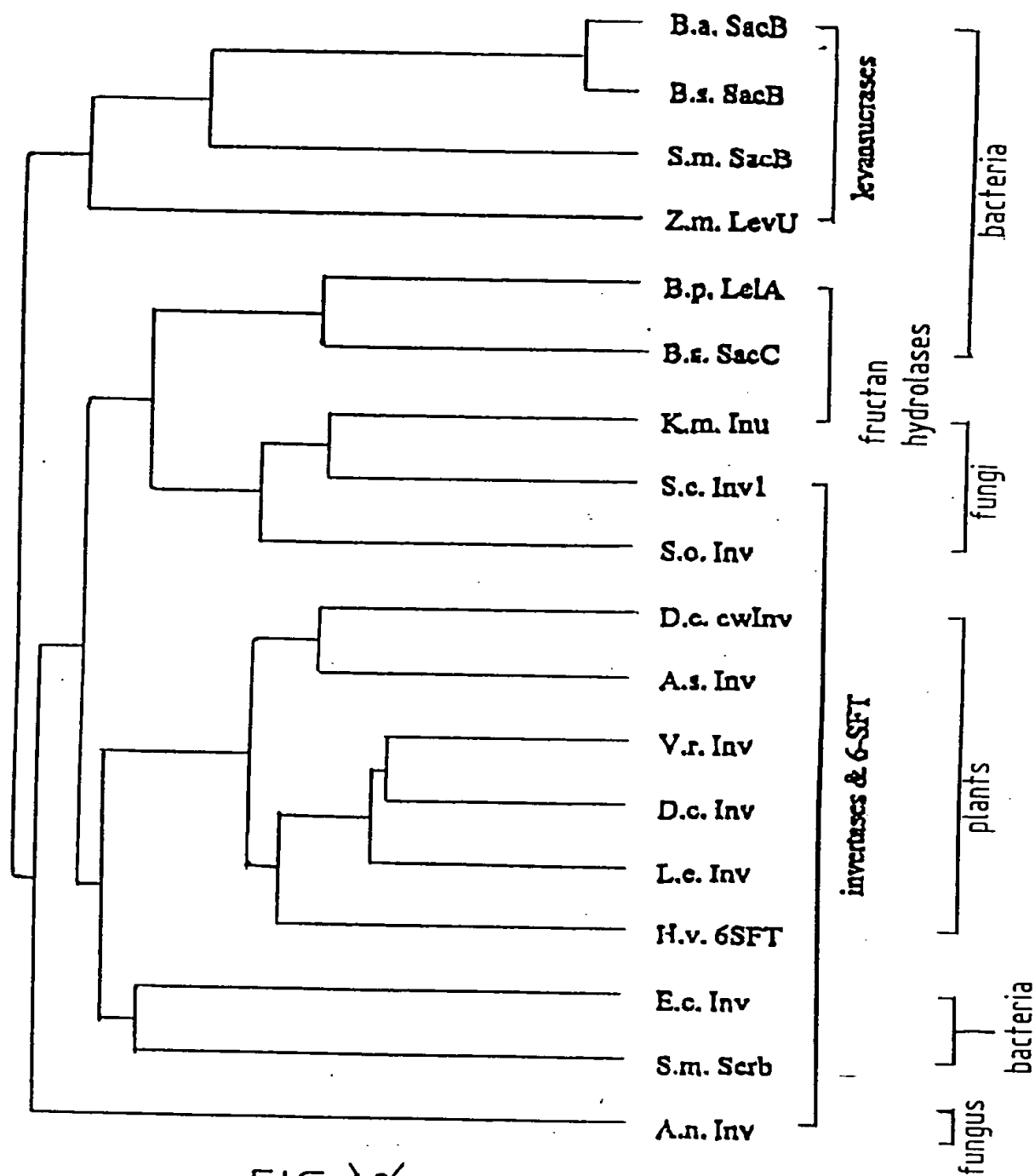
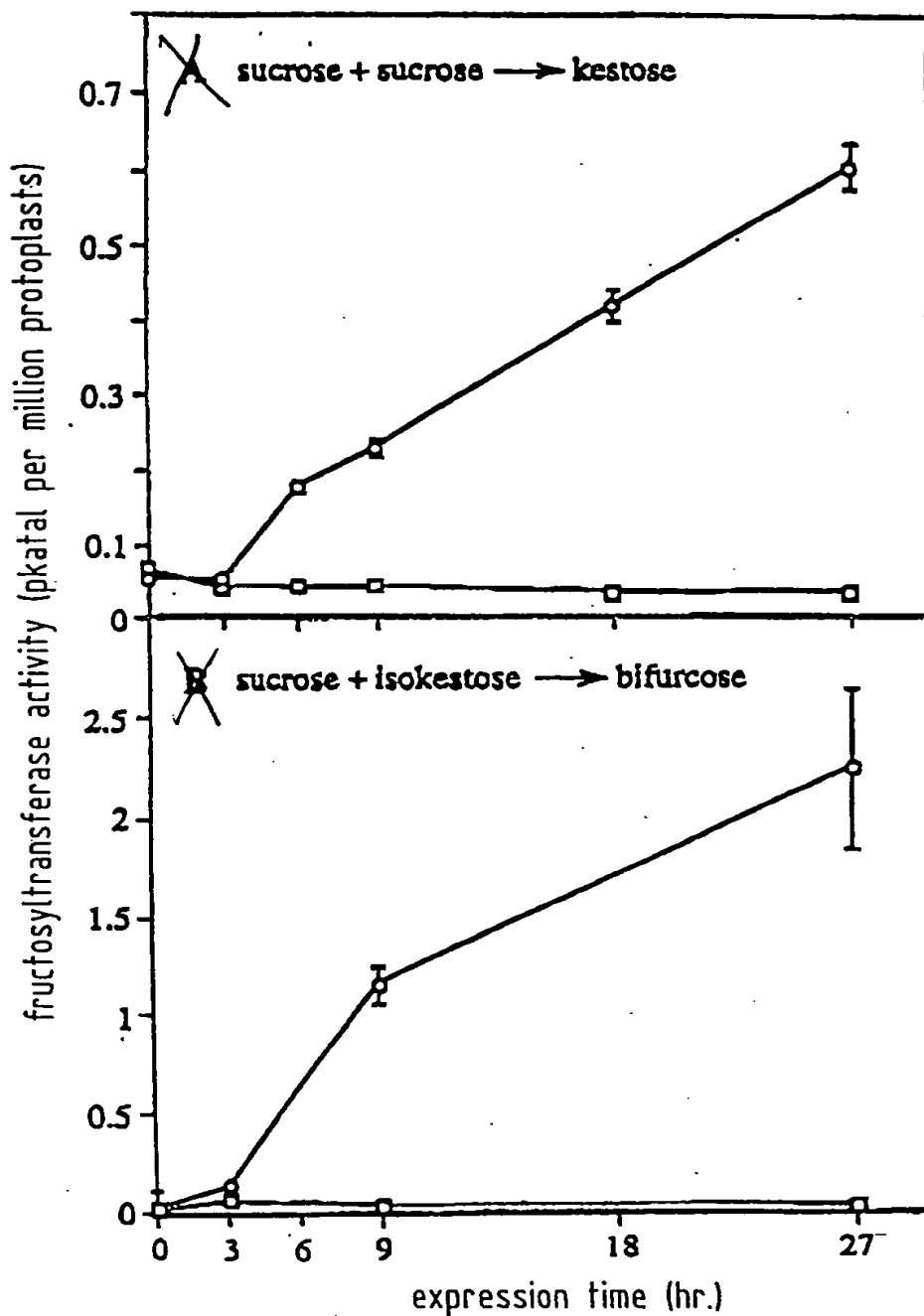


FIG. ~~10~~ 13



FIGS 14 and 15

IEF (*Helianthus tuberosus* FFT)

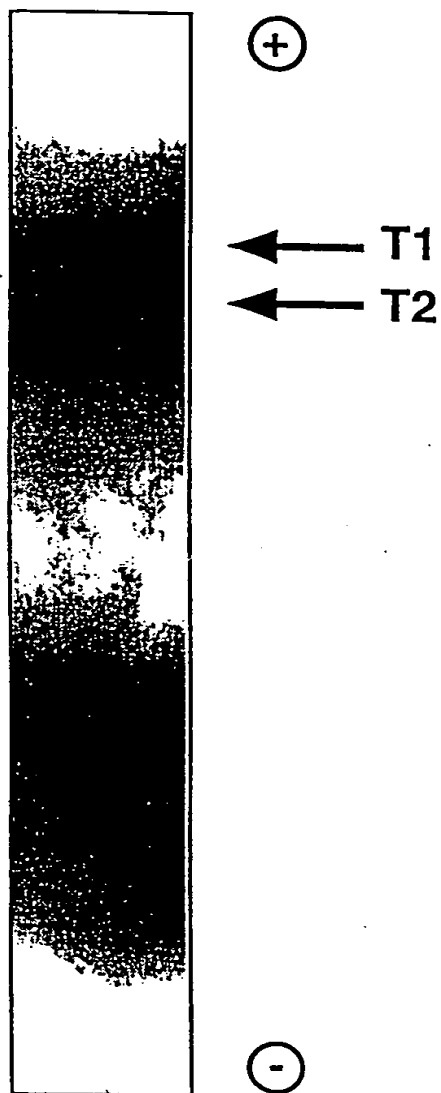


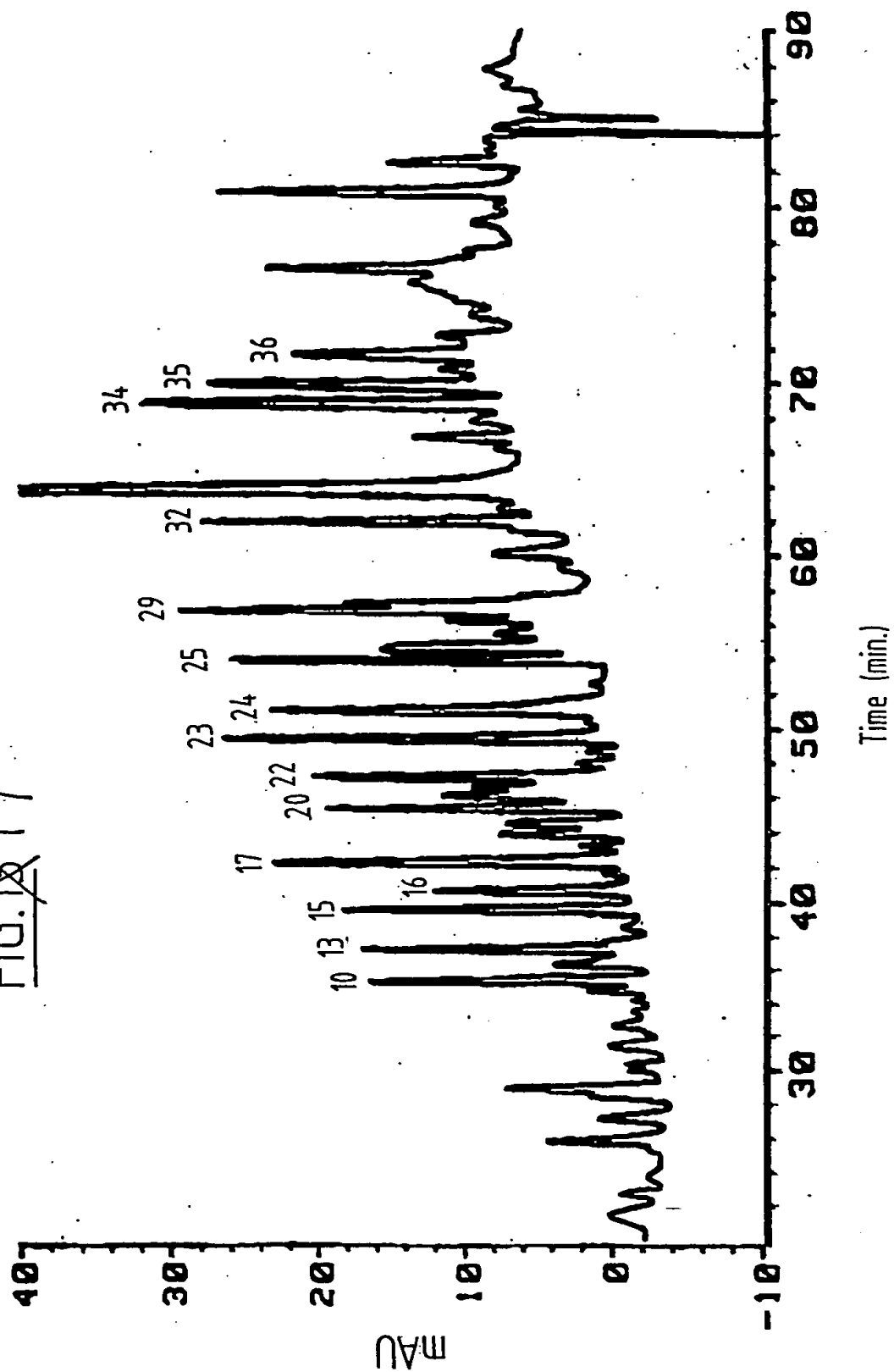
FIG. 12 16

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FIG. ~~13~~ 17



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